CLAIMS

What is claimed is:

1. A bioagent detecting system comprising:

a first group of laser diodes of an array of laser diodes for generating a first ultraviolet wavelength to fluoresce an aromatic protein;

a second group of laser diodes of the array for generating a second ultraviolet wavelength to further fluoresce the aromatic protein; and

a system controller to correlate first and second detected fluorescence levels with atmospheric absorption levels for the aromatic protein at the first and second ultraviolet wavelengths to determine if an ambient threshold is exceeded by a predetermined amount.

2. The system of claim 1 further comprising:

a detector comprising avalanche photo diodes to detect the fluorescence levels; and

a collimator to collimate ultraviolet laser light generated by the laser diodes of the array,

wherein the first and second ultraviolet wavelengths comprise a pair of wavelengths,

wherein the array comprises additional groups of laser diodes for generating other pairs of wavelengths in a range of wavelengths which cause the aromatic protein to fluoresce, and

wherein the system controller is to repeat the correlating for the other pairs of wavelengths and is to determine when a bioagent is likely to be present from the correlated detected fluorescence levels from the repeated correlations of the wavelength pairs.

3. The system of claim 1 wherein the array of laser diodes comprises an array of wavelength-diverse laser diodes to generate the pairs of wavelengths within the range of wavelengths,

wherein prior to generating the pairs, the system controller is to substantially simultaneously address diodes of the array to generate the more than one wavelength substantially simultaneously, and

wherein the system controller is to determine whether the detected fluorescence level indicates that the aromatic protein exceeds an ambient atmospheric level resulting from the substantially simultaneous transmission of the more than one ultraviolet wavelength.

4. The system of claim 1 wherein the bioagent has an aromatic-protein shell comprising Tryptophan, and

wherein the range of wavelengths ranges from between approximately 270 and 340 nanometers and the pairs of wavelengths are separated by approximately between one and five nanometers.

5. A bioagent-detection apparatus comprising:

a laser source to generate laser light at more than one ultraviolet wavelength; and

a detector to detect a fluorescence level of an aromatic protein resulting from the transmission of the more than one ultraviolet wavelength.

6. The apparatus of claim 5 wherein the laser source comprises an array of addressable laser diodes for generating the laser light at the more than one ultraviolet wavelength, the array comprising wavelength-diverse laser diodes to generate a plurality of different ultraviolet wavelengths.

7. The apparatus of claim 6 wherein the array of addressable laser diodes comprises a plurality of groups of diodes, each group selectable to generate an

individual predetermined ultraviolet wavelength of the more than one ultraviolet wavelength.

8. The apparatus of claim 5 wherein the more than one ultraviolet wavelength have wavelengths ranging between approximately 270 and 340 nanometers.

9. The apparatus of claim 5 wherein the detector comprises avalanche photo diodes.

10. The apparatus of claim 5 wherein the detector is to detect the fluorescence level of Tryptophan resulting from excitation of the Tryptophan by the more than one ultraviolet wavelength.

11. The apparatus of claim 5 wherein an aromatic-protein shell of a biological agent comprises Tryptophan,

wherein the detected fluorescence level indicates a detection of the biological agent, and

wherein the biological agent comprises at least one of Anthrax, Botox, Staphylococcal Enterotoxin B, and Clostridium Perfringens.

12. The apparatus of claim 11 wherein the more than one ultraviolet wavelength is to excite the Tryptophan below an emission peak of the Tryptophan.

13. The apparatus of claim 5 further comprising a system controller to receive a detection signal from the detector approximately proportional to the fluorescence level,

wherein the system controller is to generate a notification signal when the detection signal indicates that a threshold is exceeded.

14. The apparatus of claim 13 wherein the threshold is based on an ambient level of the aromatic protein present.

15. The apparatus of claim 6 further comprising a system controller to address diodes of the array of a first wavelength to generate ultraviolet at the first wavelength and to receive a first detected fluorescence level;

address diodes of the array of a second wavelength to generate ultraviolet at the second wavelength and to receive a second detected fluorescence level; and

correlate the first and second detected fluorescence levels with atmospheric absorption levels for the aromatic protein at the first and second wavelengths to determine if an ambient threshold is exceeded by a predetermined amount.

16. The apparatus of claim 15 wherein the first and second wavelength comprise a pair of wavelengths,

wherein the system controller is to repeat the addressing and correlating for diodes of other pairs of wavelengths in a range of wavelengths which cause the aromatic protein to fluoresce, and

wherein the system controller is to determine when a bioagent is likely to be present from the correlated detected fluorescence levels resulting from the repeating of the addressing and the correlating.

17. The apparatus of claim 16 wherein the bioagent has an aromatic-protein shell comprising Tryptophan, and

wherein the range of wavelengths have wavelengths ranging from between approximately 270 and 340 nanometers and the pairs of wavelengths are separated in wavelength by approximately between one and five nanometers.

18. The apparatus of claim 16 wherein the array of laser diodes comprises an array of wavelength-diverse laser diodes to generate the pairs of wavelengths in the range of wavelengths,

wherein prior to addressing, the system controller is to substantially simultaneously address diodes of the array to generate the more than one wavelength substantially simultaneously, and

wherein the system controller is to determine whether the detected fluorescence level resulting from the substantially simultaneous transmission of the more than one ultraviolet wavelength indicates that the aromatic protein exceeds an ambient atmospheric level by a predetermined amount.

19. The apparatus of claim 5 further comprising a collimator to collimate the laser light.

20. The apparatus of claim 19 wherein the collimator collimates the laser light for direction toward a suspect cloud in the atmosphere.

21. The apparatus of claim 20 further comprising a range finder to determine a distance to the suspect cloud, the system controller to use the distance to determine thresholds for detection based on an absorption-wavelength curve for the aromatic protein.

22. The apparatus of claim 5 wherein the laser source comprises a tunable-fiber laser to generate the more than one ultraviolet wavelength, the tunable-fiber laser comprising:

a Blaze grating to receive the more than one ultraviolet wavelength from the array of diodes and direct a selected wavelength through an output coupler based on a control signal from a system controller.

23. The apparatus of claim 15 wherein the apparatus is a hand-held bioagent detector comprising a compartment adapted to receive batteries for supplying power for at least the array of addressable diodes, the detector, and the system controller.

24. A method of detecting a bioagent comprising:

fluorescing an aromatic protein with ultraviolet wavelengths of a pair of wavelengths; and

correlating detected fluorescence levels with atmospheric absorption levels for the aromatic protein at the wavelengths of the pair to determine if an ambient level for the aromatic protein is exceeded by a predetermined amount.

25. The method of claim 24 wherein the fluorescing comprises:

addressing a first group of diodes of an array of diodes to generate a first wavelength of the pair; and

addressing a second group diodes of the array to generate a second wavelength of the pair, and

wherein the method further comprises:

repeating the fluorescing and correlating for pairs of other ultraviolet wavelengths in a range of wavelengths which cause the aromatic protein to fluoresce; and

determining when a bioagent is likely to be present from the correlated detected fluorescence levels from the repeated fluorescing and correlating.

26. The method of claim 25 wherein the array of laser diodes comprises an array of wavelength-diverse laser diodes for generating the pairs of wavelengths,

wherein prior to fluorescing with the pairs, the method further comprises generating more than one ultraviolet wavelength substantially simultaneously; and

determining whether a detected fluorescence level resulting from the substantially simultaneous transmission of the more than one ultraviolet wavelength indicates that the aromatic protein exceeds an ambient atmospheric threshold level.

27. The method of claim 26 wherein the range of wavelengths have wavelengths ranging from between approximately 270 and 340 nanometers and the pairs of wavelengths are separated in wavelength by approximately between one and five nanometers, and wherein the bioagent has an aromatic-protein shell comprising Tryptophan.